



# Corrigendum: Assessment of Eutrophication Status Based on Sub-Surface Oxygen Conditions in the Gulf of Finland (Baltic Sea)

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## A Corrigendum on

Assessment of Eutrophication Status Based on Sub-Surface Oxygen Conditions in the Gulf of Finland (Baltic Sea)

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Stoicescu S-T, Lips U and Liblik T (2019) Corrigendum: Assessment of Eutrophication Status Based on Sub-Surface Oxygen Conditions in the Gulf of Finland (Baltic Sea). Front. Mar. Sci. 6:233. doi: 10.3389/fmars.2019.00233 In the original article, there was a mistake in **Table 4** as published. In the table, the consumption estimate for reference Stigebrandt and Kalén (2013) was wrong due to a conversion error. Also, other consumption estimates (with the exception of Rahm, 1987) were in ml  $l^{-1}$  month<sup>-1</sup> and not in mg  $l^{-1}$  month<sup>-1</sup>, as they were supposed to be. The corrected **Table 4** appears below.

In the original article, there was also another error. In the sentence, "While in the earlier estimates, the monthly consumption rates varied between 0.08 and 0.90 mg  $l^{-1}$  month<sup>-1</sup>, in the present study, the estimates in the Gulf of Finland were 0.82 mg  $l^{-1}$  month<sup>-1</sup> for 2016 and 0.31 mg  $l^{-1}$  month<sup>-1</sup> for 2017," there is a reference to earlier estimates, which were incorrectly presented in **Table 4** and in the text and corrected now (see correction table below).

A correction has been made to the Discussion, paragraph 9:

Oxygen consumption results found in this study as averages for the whole period from spring to autumn (June-September) are in the range of other published results (**Table 4**). While in the earlier estimates, the monthly consumption rates varied between 0.25 and 1.29 mg l $^{-1}$  month $^{-1}$ , in the present study, the estimates in the Gulf of Finland were 0.82 mg l $^{-1}$  month $^{-1}$  for 2016 and 0.31 mg l $^{-1}$  month $^{-1}$  for 2017. This comparison is not entirely correct since the earlier estimates were mostly for longer (multi-year) periods and our study dealt only with the productive season, as well as we made our analysis for the intermediate layer (50–60 m) while in the earlier studies deeper (sub-halocline) layers were considered. However, this agreement between different results confirms that the method proposed in our study is applicable to rough consumption estimates. The other question is whether it is accurate enough to be used for eutrophication status assessment. For instance, the negative values of monthly consumption estimates in July of both years indicate that the approach may not be appropriate for shorter periods.

The authors apologize for this error and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

TABLE 4 | Monthly average oxygen consumption results found in the literature.

Location	Period	Depth	mg I <sup>-1</sup> month <sup>-1</sup>	Source
Baltic proper	1957–1982	>62 m	0.25	Rahm, 1987
Öresund	1965-1989	?	1.29	Mattsson and Stigebrandt, 1993
Bornholm Basin	1957-2011	>65 m	0.51	Stigebrandt and Kalén, 2013
Baltic proper, deep water	1972-1980	?	0.26	Shaffer and Rönner, 1984
Gotland Basin	1968–1977	?	0.34	Rydberg, 1978
Bornholm Basin	1968-1977	?	0.43	Rydberg, 1978
Gulf of Finland	2016	50-60 m	0.82	This study
Gulf of Finland	2017	50-60 m	0.31	This study

## **REFERENCES**

Mattsson, J., and Stigebrandt, A. (1993). The vertical flux of organic matter in the Öresund estimated by two different methods using oxygen measurements. *Estuar. Coast. Shelf Sci.* 37, 329–342. doi: 10.1006/ecss.1993.1060

Rahm, L. (1987). Oxygen consumption in the Baltic Proper. *Limnol. Oceanogr.* 32, 978–978. doi: 10.4319/lo.1987.32.4.0973

Rydberg, L. (1978). Deep Water Flow and Oxygen Consumption within the Baltic. Report No. 27. Göteborg: Department of Physical Oceanography, Göteborg University.

Shaffer, G., and Rönner, U. (1984). Denitrification in the Baltic proper deep water. Deep Sea Res. A 31, 197–220. doi: 10.1016/0198-0149(84)90102-X Stigebrandt, A., and Kalén, O. (2013). Improving oxygen conditions in the deeper parts of bornholm sea by pumped injection of winter water. *Ambio* 42, 587–595. doi: 10.1007/s13280-01 2-0356-4

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